

## ABSTRACT

An optical amplifier has a gain flatness which is maintained to be substantially constant regardless of temperature changes. The optical amplifier includes an EDF amplifying section and a Raman amplifying section, the Raman amplifying section having a temperature dependent gain profile which enables compensating for the temperature dependent gain profile of the EDF amplifying section. The Raman amplifying section includes a wavelength lock grating whose transmission wavelengths shift toward the short wavelength side as the temperature increases. The wavelength lock grating is preferably disposed to have the same temperature as that of an EDF of the EDF amplifying section. A method for compensating for temperature dependency of gain flatness of an optical amplifier and an optical transmission path including an optical amplifier are also disclosed.